AMSIE'96 Speaker Abstract Form

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Speaker Name: W. Timothy Liu

Session Name: Remote Sensing of Climate Sensitive Parameters from Space

INVITED SPEAKER

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Monitoring Seasonal to Interannual Air-Sea Exchanges W. TIMOTHY LIU (Jet Propulsion Laboratory 300-323, California Institute of Technology, Pasadena, CA 91109, U. S. A.)

Air-sea exchanges drive the transport and change the storage of heat, water, nutrient, and greenhouse gases and thus moderate the world's climate. The ocean feedback to climate changes must be manifested through these exchanges, without which the Earth would be a more hostile habitat. The ocean is an under-sampled turbulent fluid with non-linear interactions; processes at one scale affect processes at other scales. Adequate observations at significant temporal and spatial scales can only be achieved from the vantage point of space. Spaceborne sensors have been used to monitor atmospheric forcing (momentum, solar warming, evaporative cooling, and precipitation) and the surface signatures of oceanic response (sea surface temperature and sea level). While little influence of sea surface temperature (SST) on the seasonal variation of either solar or latent heat flux is found, both solar flux and latent heat have strong influence on the seasonal change of SST, except in the equatorial wave guide where ocean dynamics is more important. El Niño flux anomalies are found to be governed by the dislocation of large-scale circulation and organized convection more than SST, and SST anomalies are changed more by ocean dynamics than by local surface fluxes. The role of wind forcing in generating equatorial long waves and lifting the thermocline are examined through SST and sea level anomalies observed by spacebore sensors and through the simulations of art ocean general circulation model.

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